UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

*Ex parte* YOSHINARI MORIMOTO

_____

Appeal 2008-3296
Application 10/625,778
Technology Center 2800

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Decided: November 26, 2008

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Before CHARLES F. WARREN, CATHERINE Q. TIMM, and
JEFFREY T. SMITH, *Administrative Patent Judges.*

TIMM, *Administrative Patent Judge.*


DECISION ON APPEAL

I.  STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's
decision rejecting claims 1, 3, 5, 6, and 23.  Specifically, Appellant requests
review of the Examiner's rejection of claims 1, 3, 5, 6, and 23 under
35 U.S.C. § 103(a) as unpatentable over Takahashi (US 6,454,390 B1 issued
Sep. 24, 2002 to Takahashi et al.) in view of Michel (US 6,215,562 B1

issued Apr. 10, 2001 to Michel et al.). We have jurisdiction under 35 U.S.C.
§ 6(b).

We AFFIRM.

The invention relates to an ink jet printer with a reciprocating print
head. This reciprocating print head prints in both the forward direction (go-
direction) and the return direction (Spec. 1:15-21). In these bidirectional
printers, the position of the print head tends to deviate between go-direction
printing and return-direction printing (Spec. 1:22-25). Appellant's printer
automatically corrects for the positional deviation (Spec. 4:14-17). To make
the correction, the printer prints a plurality of test patterns of vertically ruled
lines on a printing medium (e.g., a piece of paper), optically scans-in the test
patterns, analyzes the density profile of the patterns, selects the best test
pattern, and prints the best test pattern on the previously printed printing
medium (e.g., the piece of paper with the plurality of test patterns previously
printed thereon) so an inspector can visually confirm that the pattern
automatically selected by the printer was indeed the best test pattern (Spec.
5:19 to 6:6; 29:4-22).

Figure 8 reproduced below shows the end result printing medium.
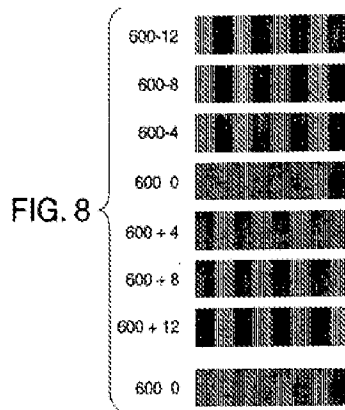


FIG. 8

Figure 8 depicts a test pattern printed at 600 dots per inch (dpi) with shifts of from minus 12 to plus 12 dots in return-printing (Spec. 18:4-8) as the top seven patterns. The "best pattern" (zero offset in this case) is reprinted below the test pattern. The claims are directed to the printer having control mechanisms for accomplishing the printing of the test patterns.

Because Appellant limits the arguments to claims 1 and 23, in accordance with 37 C.F.R. § 41.37(c)(1)(vii), we select those claims as representative in deciding the issues on appeal. Claim 1 is reproduced below:

1. An ink jet printer, comprising:

a printing unit having a carriage and a print head in which a plurality of ink jet nozzles are arranged in plural columns, the printing unit printing on a printing medium while reciprocating the print head by the carriage for go-printing and return-printing;

a sensor disposed on the carriage and having a light-emitting portion for emitting light toward the printing medium and a light-receiving portion for receiving reflected light from the printing medium;

a test pattern printing control unit that causes the printing unit to print a test pattern in which vertical ruled lines are arranged with a prescribed pitch;

a plural patterns printing instructing unit that causes the printing unit to print a plurality of test patterns while changing a test pattern printing interval of the return-printing with respect to the go-printing in plural stages;

a best pattern detecting unit for scanning-in the printed test patterns with the sensor and for automatically selecting a best test pattern from the scanned-in test patterns; and

a best pattern printing instructing unit that causes the printing unit to print information indicating an image of the selected best test pattern on the printing medium, wherein the best pattern printing instructing unit causes the printing unit to reprint the selected best test pattern from the scanned-in test patterns on the printing medium at the test pattern printing interval that produces the selected best test pattern as information indicating the image of the selected best test pattern.

Claim 23 is identical as claim 1 except that in place of the last "wherein" clause, claim 23 recites:

> wherein the image printed on the printing
> medium includes a confirmation pattern that
> corresponds to the selected best test pattern and
> its number of shift notes.

Claim 1 requires that the "best pattern printing instructing unit" cause the printing of two images of the best test pattern on the same printing medium (e.g., a single piece of paper). Claim 23 requires the unit cause the printing of a confirmation pattern.

## II. DISPOSTIVE ISSUES

The issues on appeal are:

1. Has Appellant identified a reversible error in the Examiner's determination that it would have been obvious within the meaning of § 103 to include in the printer of Takahashi a unit that causes the printing of two images of the scanned-in best test pattern on one printing medium as required by claim 1?

2. Has Appellant identified a reversible error in the Examiner's finding that Takahashi describes a unit that causes the printing of a "confirmation pattern that corresponds to the selected best test pattern" as required by claim 23?

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## III. FINDINGS OF FACT

The following enumerated findings of fact ("FF") are of particular relevance to the issues on appeal:

1. According to Takahashi, it was known in the art to adjust dot alignment by printing ruled line test patterns, each pattern having ink dots varying in position between the forward scan (go-printing) relative to the reciprocal scan (return-printing), i.e., the dot offset varying for each pattern. After manually reviewing the printed test patterns, one selected the best print pattern and manually adjusted the printer based on the best test pattern (Takahashi, col. 3, ll. (50-63).

2. Takahashi teaches an improvement to the conventional manual alignment process. In Takahashi's process, the selection of the best test pattern is automated. An optical sensor senses the density of printed test patterns, automatically selects the best test pattern (Takahashi, col. 5, ll. 55-61; col. 15, ll. 28-56), and the best test pattern is then printed as a confirmation (check) pattern (col. 15, ll. 56-60).

3. Takahashi suggests printing a ruled line pattern as the confirmation pattern because "the ruled line patterns is easy to be identified." Takahashi states that "[a]ccording to this manner, the user can identify the result of the dot alignment which was carried out obviously." (Takahashi, col. 16, ll. 55-60).

4. Takahashi teaches an embodiment in which nine test patterns (patches) 61 to 69 are printed. Figure 17 illustrates the printed medium with the nine patterns as follows:
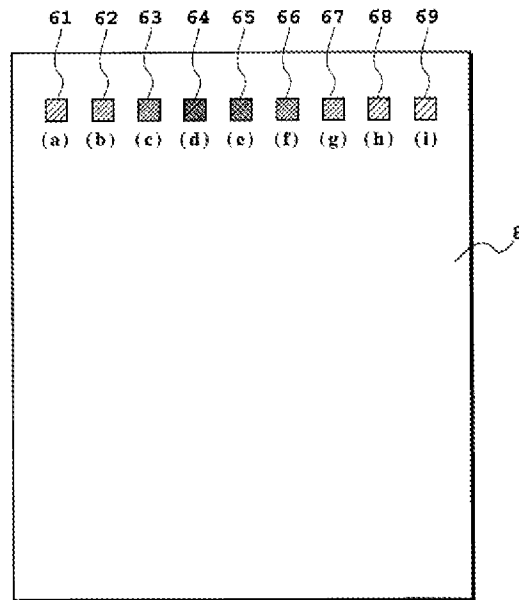
*FIG.17*

Figure 17 shows print medium 8 with nine patterns designated (a) through (i) as patches 61 to 69. Based on optical density measurements, test pattern (d) at 64 is taken as the best test pattern (Takahashi, col. 26, ll. 7-15).

5. While Figure 17 shows square or rectangular patterns (patches), Takahashi does not limit the patches to this configuration. Any configuration that allows the optical sensor to measure the density is sufficient (Takahashi, col. 27, ll. 20-25).

6. Takahashi discloses printing adjustment patterns (test patterns) and a confirmation pattern on a single printed medium (Takahashi, col. 41, ll. 50-54). Figures 49A and 49B illustrate an example printed page containing the test patterns and a check pattern. Figures 49A and 49B are reproduced below:
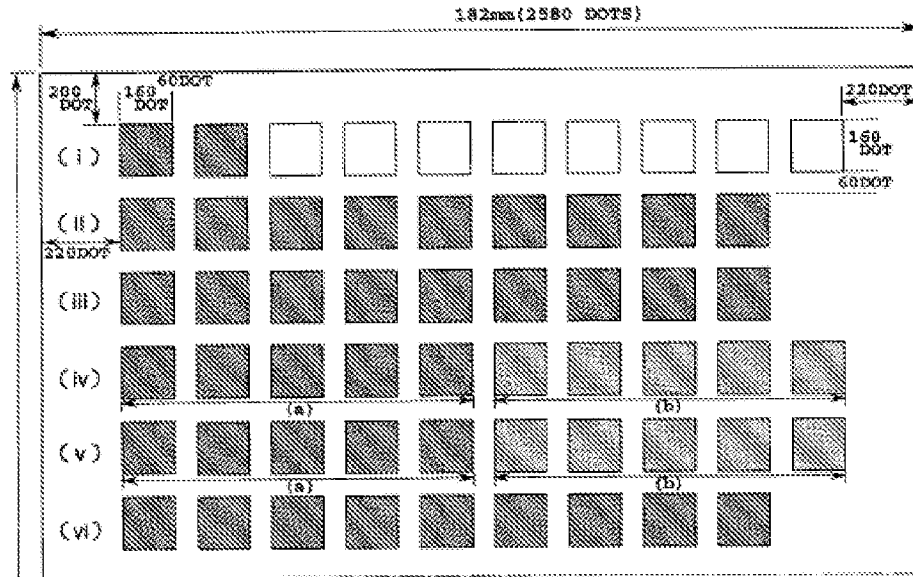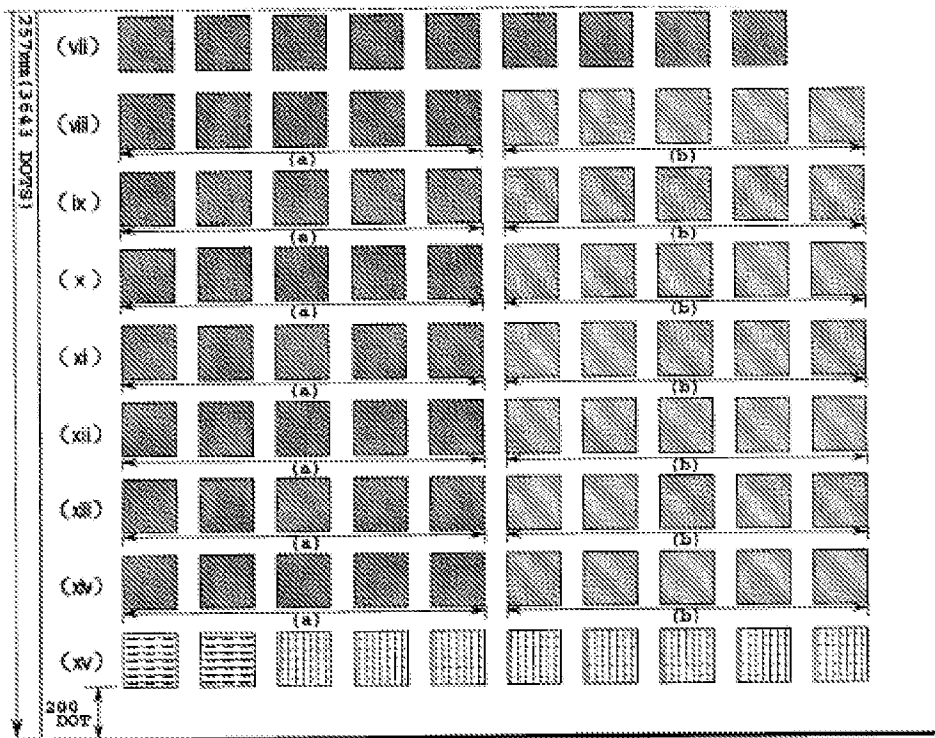
FIG.49

FIG.49A

FIG.49B

FIG.49A

FIG.49B

Figures 49A and 49B show adjustment test patterns as patch groups
(ii) through (xiv) and a confirmation pattern at (xv) (Takahashi, col.
47, l. 46 to col. 48, l. 29). The confirmation pattern is a representation

of the best test pattern in the form of a ruler mark pattern or other pattern easy to recognize by the user (Takahashi, col. 41, ll. 45-50).

7. Michel teaches a calibration process which first prints a test page with a C,M,Y gray of the printer as a middle patch, with C,M,Y variations of the gray around the central patch. The patches vary in hue, saturation, and brightness. (Michel, col. 6, ll. 34-53.) From the printed test page, a user selects the best patch, and the printer prints the page with the selected patch as the middle patch. The process is repeated until the user selects the middle patch as the best patch. Michel, col. 7, ll. 1-8; Fig. 2). Because the page with the selected "best patch" also contains all the original patches, the page contains the "best patch" in its original location as well as the "best patch" in the center.

## III. PRINCIPLES OF LAW

A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the pertinent art. 35 U.S.C. § 103(a)(2000). An improvement in the art is obvious if "it is likely the product not of innovation but of ordinary skill and common sense." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007). There is a fundamental proposition that obvious variants of prior art references are themselves part of the public domain. *In re Translogic Tech.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007); *citing KSR*, 127 S. Ct. at 1743.

## V. ANALYSIS

As shown by the evidence, there were known in the art numerous ways of calibrating a reciprocating print head using test patterns (FF 1-6). For instance, in one method, a user prints a sheet of ruled line test patterns with varying dot offsets and the user manually selects the best test pattern (FF 1). In other known methods, the user's review is replaced by an optical sensor. The sensor determines the best test pattern by sensing the density of printed test patterns (FF 2). In various calibration processes, it was also known to print a page with all of the test patterns plus a confirmation pattern representing the best test pattern (FF 2, 6, 7). Michel discloses reprinting the best pattern in the center of a sheet also containing the original pattern (FF 7). However, in the specific embodiments disclosed by Takahashi, the initially printed best test pattern is different from the confirmation pattern (FF 3, 6). This is because Takahashi optically scans square patches, while the confirmation pattern is in ruled line form for easier checking by the user (FF 3).

While Takahashi does not explicitly disclose "reprinting" the same best test pattern initially printed (the best test pattern from the scanned-in test patterns), we cannot say that such would have been non-obvious to the ordinary artisan. This is because Takahashi's teachings are not limited to the use of the specifically exemplified test patterns. Any configuration that allows the optical sensor to measure density is sufficient (FF 5). The difference in the scanned patterns and confirmation pattern exemplified by Takahashi is the result of a particular selection of patterns in those embodiments. As it would have been obvious to select other known patterns readable by optical scanners, such as ruled line patterns, the use of such a

pattern, which is also easily readable by a user, would result in "reprinting" as claimed.

Appellant has not identified a reversible error in the Examiner's determination that it would have been obvious within the meaning of § 103 to include in the printer of Takahashi a unit that causes the printing of two images of the scanned-in best test pattern on one printing medium as required by claim 1.

With regard to claim 23, Appellant has not disputed the Examiner's finding that Takahashi discloses printing a confirmation pattern as claimed (Ans. 5, 8). Claim 23 does not require a reprint of the scanned-in best pattern.

Appellant has not identified a reversible error in the Examiner's finding that Takahashi describes a unit that causes the printing of a "confirmation pattern that corresponds to the selected best test pattern" as required by claim 23.

Appellant has limited the scope of the arguments, as presented in the Briefs, to the above issues and do not further contest the Examiner's rejection of the claims. In the hearing of October 21, 2008, Appellant advanced an additional argument directed to the requirement in claim 23 that the printed image includes the number of shift dots. As this argument was not advanced in the Briefs, and good cause for why we should consider this argument has not been shown, we do not consider this argument. 37 C.F.R. § 41.37(c)((1)(vii)(2006).

## VI.  CONCLUSION

The rejection of claims 1, 3, 5, 6, and 23 under 35 U.S.C. § 103(a) is sustained.

## VII.  DECISION

The decision of the Examiner is affirmed.

## VIII.  TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

<u>AFFIRMED</u>

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